## CLAIMS:

- 1. A heat-resistant coated member in which a substrate consisting essentially of a metal selected from the group consisting of molybdenum, tantalum, tungsten, zirconium, titanium, and alloys thereof is coated with a layer consisting essentially of lanthanoid-containing oxide.
- 2. The heat-resistant coated member of claim 1, wherein the lanthanoid-containing oxide consists essentially of an oxide of at least one element selected from the group consisting of dysprosium, holmium, erbium, terbium, gadolinium, thulium, ytterbium, lutetium, europium and samarium.
- 3. The heat-resistant coated member of claim 2, wherein the lanthanoid-containing oxide consists essentially of an oxide of at least one element selected from the group consisting of ytterbium, europium and samarium.
- 4. The heat-resistant coated member of claim 1, wherein the layer consisting essentially of a lanthanoid-containing oxide is a lanthanoid-containing oxide layer containing ytterbium in an amount that accounts for at least 80 atom % of all the metal elements including lanthanoid elements.

- 5. The heat-resistant coated member of claim 1, wherein the layer consisting essentially of lanthanoid-containing oxide has a thickness of from 0.02 to 0.4 mm.
- 6. The heat-resistant coated member of claim 1, wherein the layer consisting essentially of lanthanoid-containing oxide is provided thereon with one or more layers comprising a compound of at least one element selected from among Group IIIA to Group VIII elements in the CAS version of the periodic table.
- 7. The heat-resistant coated member of claim 1, wherein the layer coated on the substrate is obtained by a thermal spraying operation.
- 8. A heat-resistant coated member in which a substrate composed of elemental carbon, is coated with a layer consisting essentially of lanthanoid-containing oxide.